TENTH ANNUAL REPORT

Submitted to the United States Fish and Wildlife Service, the California Department of Fish and Game, the NOAA Fisheries, and the California Department of Forestry and Fire Protection
By
Humboldt Redwood Company, LLC

To fulfill the requirements of The Pacific Lumber Company Habitat Conservation Plan, 6.2, Northern Spotted Owl Conservation Plan

January, 2009

THE HUMBOLDT REDWOOD COMPANY, LLC NORTHERN SPOTTED OWL TENTH ANNUAL REPORT, January 2009

EXECUTIVE SUMMARY

The year 2008 was the tenth year of surveys and monitoring under the Northern Spotted Owl Conservation Plan (Habitat Conservation Plan or HCP 6.2) of the Pacific Lumber Company (PALCO) HCP. The intent of this report is to briefly summarize the methods, results, and management objectives of this conservation plan. As with previous reports, relevant appendices have been copied to a CD (attached).

The 2008 survey season continued to incorporate the changes in survey methods resulting from the HCP minor modifications agreed upon in 2002. Monitoring surveys were accomplished using 303 calling stations to cover all potential habitats within the 2008 sample quadrats. Overall, a total of 727 calling stations were used to conduct nighttime surveys of the quadrats, Timber Harvesting Plan (THP) surveys, and site preparation surveys. Follow-up visits were conducted to the locale of night contacts to determine the status and location of the owls contacted. A total of 602 daytime status visits were conducted. All core sites, and all activity sites within the sample quadrats, were visited to determine occupancy, reproductive status, and reproductive success (if applicable).

Management objective 1 of the HCP requires the maintenance of a minimum of 108 activity sites in the HCP area over the life of the permit. There were 177 total activity sites in 2008, including the 108 core sites. Therefore management objective 1 was met in 2008. Management objective 2 calls for maintenance of spotted owl pairs on a five-year running average of 80% of the activity sites in the HCP area. In 2008, 86 of the 108 cores sites were occupied by a pair of spotted owls, for a pair occupancy rate of 80% (0.796). The five-year running average for the occupancy rate by pairs is now 81%. Management objective 3 requires the maintenance of a five-year running average reproductive rate of at least 0.61 fledged young per pair for the core sites (for those pairs monitored to determine reproductive output). During the 2008 breeding season, 86 pairs (of the 108 core sites) were monitored for nesting activity and reproductive output. Nesting activity was verified for 59 of the 86 pairs. A total of 84 young were fledged, resulting in a reproductive rate of 0.98. Consequently, the running average of the reproductive rate for the tenth year of the HCP was 0.62, slightly above management objective 3.

HRC continues to have concerns about various threats to our spotted owl population represented by barred owls, West Nile Virus, and sudden oak death. Individually or in concert these organisms have the potential to reduce or eliminate the HRC spotted owl population or habitat regardless of HCP effects. At present, the actual effect of these threats on our population is unknown.

INTRODUCTION

The purpose of this Northern Spotted Owl (spotted owl or NSO) tenth Annual Report is to present the results of surveys and analyses of management objectives for the northern spotted owl (*Strix occidentalis caurina*) on lands of the Humboldt Redwood Company, LLC (HRC) covered by the PALCO Habitat Conservation Plan (HCP), U.S. Fish and Wildlife Service (USFWS) Permit TE828950-0.

The reporting period is from 1 January 2008 to 1 January 2009, and covers surveys conducted from March to August 2008. The year 2008 was the tenth year of surveys and monitoring under the Northern Spotted Owl Conservation Plan (HCP 6.2). Regarding annual surveys, or censuses, HCP Section 6.2.2 # 2 states:

Monitoring data shall be provided annually to the NSOSRP (Northern Spotted Owl Scientific Review Panel), *the USFWS, and CDFG.*

As stated in HCP Section 6.2, the overall conservation strategy for spotted owls is a habitat-based approach that includes the harvest, retention, and recruitment of habitat and essential habitat elements at both the landscape, and activity site levels. The strategy also includes measures for disturbance minimization, population monitoring, and adaptive management techniques.

During the tenth year of HCP implementation, the northern spotted owl program continues to follow the "quadrat" sampling approach and minor modifications approved in 2002 to monitor the "core" owl sites for occupancy and reproduction.

These minor modifications approved in 2002 consisted of three primary components: 1) clarification that the HCP's spotted owl management objectives apply to the "core" (i.e., Level One and Level Two) owl sites, 2) modification of the census techniques to concentrate on sampling "quadrats" made up of watershed units on the covered lands, and 3) modification of survey methods for site preparation activities, recognizing that these activities are different in nature from timber harvesting relative to breeding season disturbance. These minor modifications to the HCP have been appended to previous reports, and are incorporated here by reference.

During a September 2003 meeting we also continued discussions with the USFWS and the CDFG regarding the evaluation for retention or removal of activity sites. These discussions eventually led to the development of a mutually agreed-upon survey methodology for removal of unoccupied sites from the list of activity sites.

This brief introduction of the 2008 spotted owl program is expanded below. In particular, this report discusses: 1) the study area and methods used in the assessment of spotted owls within that study area, 2) results of the survey efforts, 3) the meaning of the results both biologically and with respect to the management objectives of the HCP, and 4) HRC's year 2009 action plan for the spotted owl conservation plan.

STUDY AREA AND METHODS

The HRC HCP covered lands currently encompass approximately 207,000 acres and are located in coastal Humboldt County in northern California (see Figure 1). The HCP area is characterized by mountainous terrain, a maritime climate, and dense coniferous forests, primarily dominated by the coast redwood (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii*) forest-types.

In general, field survey methods for spotted owls are conducted following guidelines in the U.S. Fish and Wildlife Service protocol, "Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls" (USFWS 1992). For all survey methods, when a spotted owl response is evoked during the nighttime surveys, presence, and if possible, status is determined with a follow-up daytime visit.

Follow-up visits were conducted using walk-ins to try and locate nesting or roosting owls. Owl sites were checked to determine occupancy and nesting status. The surveyor walks-in to a known site, or returns to the site of a survey contact, and uses voice calling to try and contact the spotted owls which may be nesting or roosting at the site. An area of roughly 0.5 mile around the previous contact is used as a search area. When a single or pair of spotted owls is contacted on the follow-up visit, the surveyor offers prey items in an attempt to establish breeding status.

Monitoring, Timber Harvesting Plan (THP), and Site Preparation Surveys

As discussed above, minor modifications to the HCP that were approved by the CDFG and USFWS in 2002 affected the survey methodology for monitoring, THP, and site preparation activities. For monitoring, or census purposes, a quadrat sampling design was implemented to replace a complete census. THP survey methods were refined as a result of experience from the first three years of HCP implementation. In addition, surveys for site preparation activities were modified in recognition of the characteristics, and duration of activities that are involved, and also of the potential for disturbance to spotted owls during the breeding season.

Monitoring Surveys

The Northern Spotted Owl Conservation Plan, HCP 6.2.2, # 2 reads:

PALCO shall conduct complete annual censuses to monitor all activity sites on the ownership and to determine numbers of pairs, nesting pairs, and reproductive rates. PALCO may use a sampling methodology, rather than a complete census, provided that the sampling proposal has been reviewed by the NSOSRP and approved by the USFWS and CDFG. Monitoring data shall be provided annually to the NSOSRP, the USFWS, and CDFG.

The USFWS, CDFG, NSOSRP, and PALCO had agreed that using a sampling methodology, rather than a complete census is likely to have several benefits for the population of spotted owls on HRC's covered lands as well as for HRC staff. Following agreement between PALCO, the USFWS, and the CDFG that the HCP management objectives (HCP 6.2.1) for pair occupancy and reproduction apply to the core sites as in HCP 6.2, Table 7, the objectives of a sampling methodology were therefore clarified. Thus, the objectives of sampling a subset of the covered lands each year via night surveys include:

- Tracking known sites within the quadrats surveyed,
- Finding new sites that may be used as part of the minimum level (core) sites,
- Inventorying sites related to management activities, and
- Tracking the number and location of sites within a given geographical area over time, to help provide information on the effects of management activities.

The quadrat approach relies on large hydrologic areas containing multiple owl territories as the basic sampling units (Figure 1). The hydrologic units are based on significant watershed areas (e.g., Freshwater Creek, Elk River), using the dividing ridgelines as the boundaries between units. Where necessary to maximize sampling efficiency, hydrologic units were combined into logical units, resulting in a total of 20 quadrats. In other words, if a hydrologic unit on the periphery of the covered lands contained a relatively small portion of HRC covered property, then it was incorporated into an adjoining, logical unit. During the 2008 season, Quadrats 2, 7, 9, and 11 were sampled.

The basic methods and reporting requirements of the quadrat sampling approach are as follows:

1. Using USFWS night survey protocol techniques, conduct three survey visits of all suitable habitat in the four quadrats for that sample year.

2. Use daytime follow-up visits (i.e., again using USFWS techniques) to check occupancy and reproductive status of all known sites in the quadrat (including any core sites).

3. In addition to the visits in item # 2, use daytime follow-up visits to check occupancy and status of any sites contacted on the night surveys.

4. In addition to calculating the values of pair occupancy and reproductive rate for the management objectives of HCP 6.2.1 for the core sites, also calculate the results of the same values for all sites monitored in the quadrats. These combined data will be used to track pair occupancy and reproductive trends over time, and will be compared to information gathered on spotted owls at other study sites in Northern California.

5. Prior to 1 June each year HRC shall report to the USFWS and the CDFG on the quantity and distribution of suitable spotted owl habitat in the quadrats and on

the covered lands as a whole. This information will be used to help understand potential reasons why management objectives may not be met, and potential means of correction (e.g., HCP 6.2.3 # 6).

6. All survey and status visit results, as well as habitat information from item # 5, will be reported annually in the HCP Annual Report, due each year on 1 February.

Timber Harvesting Plan (THP) Surveys

The methods for surveying THPs in HCP 6.2.2 # 3 also underwent minor modification in 2002, as a result of discussions and agreement between the CDFG, USFWS and PALCO. Refinements in the THP surveys were primarily in the areas of timing of surveys, and clarification in procedural language. The modifications have been included in previous reports and correspondence, and are incorporated here by reference.

Site Preparation Surveys

Site preparation activities, e.g., those activities undertaken following timber harvest, and in preparation for reforestation of a site, typically have little potential for disturbance of breeding, and are of relatively short duration (the methods of surveying for spotted owls for these kinds of activities also were subject to minor modification during 2002). Again, the surveys as described in the modified HCP 6.2.2 # 3 have been appended to previous reports.

Activity Site Determination

As in past years under the HCP, occupancy and reproduction determination criteria used were consistent with those outlined by the USFWS protocol, along with guidance received from the USFWS and the CDFG. Further, in 2002 the CDFG, USFWS and PALCO discussed and agreed upon a method for determining the establishment and also possibly the location of activity centers based on audio contacts only, and in 2003 agreed upon standards for removal of sites. These methods have been discussed and appended in previous reports.

RESULTS AND DISCUSSION

The 2008 survey season continued to incorporate the changes in survey methods resulting from the HCP minor modifications agreed upon in 2002. Primarily, the change to the quadrat sampling design resulted in a reduced effort overall with respect to the number of calling stations used to survey.

Monitoring surveys were accomplished using 303 calling stations to cover all potential habitats within the 2008 sample quadrats. In comparison, the 2007 season resulted in the use of a total of 287 calling stations used to cover the habitat within the sample quadrats on HCP covered lands. Overall, a total of 727 calling stations were used to conduct

nighttime surveys of the quadrats, Timber Harvesting Plan (THP) surveys, and site preparation surveys. Surveys in 2008 resulted in the equivalent of 2,105 nighttime survey visits, in comparison to 1,952 in 2007. A concerted effort to reduce unnecessary surveys was made in 2008. Although the number of stations per harvest plan was again increased from previous years, fewer stations were needed overall. This reduction was primarily achieved by utilizing call stations that were being used for both quadrat and THP-related surveys when possible, particularly in the Elk River quadrat.

Barred Owls

First PALCO, and now HRC have been tracking detections of barred owls (*Strix varia*) since the species began responding to spotted owl calls on surveys starting in about 1991. Given the evidence from Washington, Oregon, and other regions of California that barred owls can have a very significant impact on occupancy and breeding of spotted owls (Anthony et al. 2004, Courtney et al. 2004), HRC remains concerned about the potential for barred owls to disrupt the management goals of the HCP for spotted owls.

Barred owl activity in the study area for 2008 indicated that there are distinctive "territories" that are now reproductively active. In addition, there appears to be a *decrease* in nighttime detections (see Figure 2). Green Diamond Resource Company (GDRCo.) has experienced similar behavior (Thompson, Diller pers. Comm.) in barred owls on their managed timberland. Over the past several years, there have been a number of Level One sites that have been displaced by barred owls (Site 269 Lower Freshwater Creek, Site 15 Bell Lawrence Creek,). Likewise, there have been several sites that have been re-occupied by spotted owls after the apparent disappearance of barred owls (Site 260 Gas Wells, Site 99 Chadd Creek, Site 167 Corbett Ranch-Van Duzen River, Site 574 Mt. Bemis-Grizzly Creek Complex, and Site 5 Upper Freshwater Creek). See Figure 2 for a map of the historic barred owl detections and nest sites located on HRC property.

West Nile Virus (WNV)

West Nile Virus (WNV) has the potential to be a very serious threat to the Northern Spotted Owl range-wide, and specifically to the Klamath region population (e.g., Courtney et al. 2004). It is unclear what effect WNV will have on population viability of spotted owls, and so the scientists involved in the recent 5-year status review of the species discussed two scenarios: 1) an unlikely range-wide reduction, and 2) a likely range-wide reduction in population viability (Courtney et al. 2004). They summarized the scenarios thusly:

"We consider either scenario likely. Where the Northern Spotted Owl co-occurs with large mosquito populations, mortality may increase for a few years after WNV emerges in the region. This direct effect and possible indirect effects may eliminate Northern Spotted Owls in parts of their range, but range-wide reduction of population viability is unlikely because owl populations number in the several hundreds to thousands. Thus, severe, but short-term population reductions may be tolerated."

WNV has been documented in other species in Humboldt County. Mosquitoes are very prevalent in the area. HRC is very concerned about the potential for WNV to cause a severe die-off among the Southern Humboldt population of spotted owls. HRC's HCP requires the maintenance of a core number of spotted owl activity sites that exhibit consistent reproduction. WNV has the potential to disrupt HCP objectives regardless of the covered activities of the HCP. HRC had hoped to participate in a cooperative WNV study in 2007 to learn more about the disease in our study area, but unfortunately we did not have sufficient funds to participate. We have not located any specimens with WNV in 2006 2007, or 2008.

Sudden Oak Death (SOD)

The infection of hardwood species by the fungus *Phytophthora ramorum* and subsequent deterioration of spotted owl habitat has been raised as a threat (Courtney et al. 2004, Courtney et al. 2008). This could be especially harmful to spotted owl habitat in the Bear and Mattole watersheds on HRC lands where the hardwood component of habitat is most prevalent. However, the most recent evaluations of the extent of SOD in southern Humboldt County show only sporadic incidence, subject to continued monitoring (Courtney et al. 2008).

Follow-up Visits

Timely follow-up visits were conducted to the locale of night contacts to determine the status and location of the owls contacted. All core spotted owl sites, and all activity sites within the sample quadrats ("quadrat sites") were visited to determine occupancy, reproductive status, and reproductive success (if applicable). Other sites were visited to determine occupancy prior to the June designation of Level 1 sites. A total of 602 daytime status and follow up visits were conducted, in comparison to 629 in 2007.

Overall, fewer status and follow up surveys were required in 2008 primarily due to a more efficient survey strategy and fewer THPs to survey. In addition, the quadrats for 2008 contained fewer core sites, reducing our daytime workload . Surveys and daytime status visits were conducted in order to collect data to determine the HCP management objectives (HCP 6.2.1) for the core sites, as discussed above in the Study Area and Methods section.

Management Objectives 1 and 4

Management objectives 1 and 4 of the HCP require the maintenance of a minimum of 108 activity sites in the HCP area over the life of the permit, and at least 108 total activity sites in the tenth year of the permit (2008). As noted above, the HCP management objectives apply to the 108 core sites, consisting of 80 Level 1 sites, and 28 Level 2 sites. Therefore, with the 108 core activity sites, management objectives 1 and 4 have been met for 2008 (Table 1). Six activity centers met the "dropped" criteria as per the Decision Tree for Removal of Activity Centers and were removed from our GIS layers.

Although tracking of total numbers of activity sites beyond the 108 core Level 1 and Level 2 sites is not a requirement of the HCP it is interesting to note that the total number of activity sites, including Level 3 sites, has remained relatively constant over the HCP years (Range 149-195, mean 176.1) (Figure 3). Only 149 activity sites were reported in the first year of HCP implementation (1999) when not all of the lands were surveyed, and in 2000 several activity sites were included that were not occupied, resulting from take avoidance management prior to the HCP, which were subsequently removed from the inventory for 2001. It should be noted that not all Level 3 sites are surveyed for occupancy or non-occupancy every year, depending on which quadrats are being surveyed.

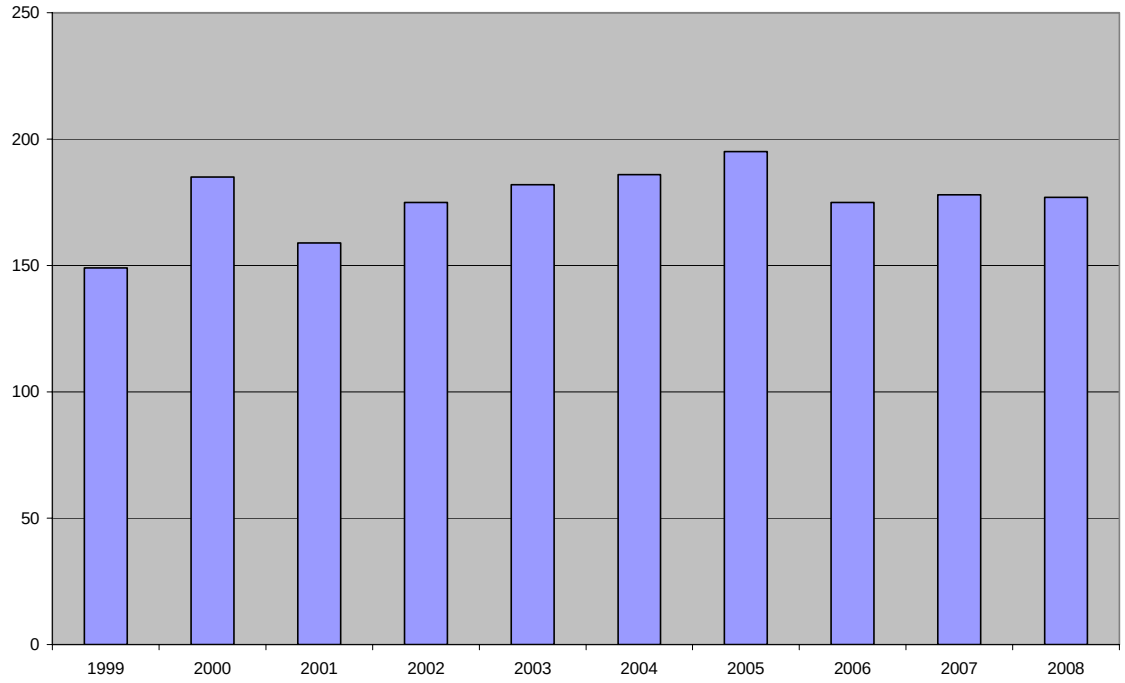
Table 1. HCP northern spotted owl sites and occupancy status for 2008.

Parameter Description	No. of Sites	Core Sites	Quadrat Sites
A) HCP Property Sites	177	108	33
B) Occupied by Pairs	88	86	25
C) Occupied by Male	14	9	3
D) Occupied by Female	10	10	3
E) Occupied by Bird of unknown sex	7	3	2
F) Unoccupied (sites retained)	52	5	5
G) Unoccupied (sites removed)	6	N/A	6
Occupancy rate by pairs* HCP(6.2.1.2) target = 80%)	N/A	80%	76%

*Occupancy rate by pairs is determined by taking the number of sites occupied by pairs (B), and dividing it by the number of occupied sites: (A).

Core Sites include all Level 1 and Level 2 Sites.
Quadrat Sites include all occupied sites within the quadrats being sampled.

Figure 3. Total NSO Activity Sites by HCP Year



Management Objective 2

Management objective 2 calls for maintenance of spotted owl pairs on an average of 80% of the activity sites in the HCP area. During HCP development, 80% was selected as a target by taking the average number of occupied sites that contained pairs during the period of 1991 to 1998. As per HCP 6.2.3 # 6, the values pertaining to management objectives 2 and 3 are to be averaged over running five-year periods (see below). Site occupancy surveys verified pairs at 86 of the core 108 sites during the 2008 season (Tables 1 and 2). Therefore, for 2008 the occupancy rate by pairs was 80% (0.796). The five-year running average (Table 3.0) for the occupancy rate by pairs is 81% (0.81).

To address the agreed-upon reporting components of the quadrat sampling approach, we also calculated the pair occupancy rate for all sites monitored in the quadrats. The pair occupancy rate for the 33 activity sites within quadrats was 76%. For the quadrat sites, the five-year running average for the pair occupancy rate is also 76% (Tables 1 and 3.1).

Management Objective 3

Management objective 3 requires the maintenance of an average reproductive rate of at least 0.61 fledged young per pair for the core sites (for those pairs monitored to determine reproductive output). During the 2008 breeding season, 86 pairs (of the 108 core sites) were monitored for nesting activity and reproductive output. Nesting activity was verified

for 59 of the 78 pairs. A total of 84 young were fledged, resulting in a reproductive rate of 0.98 (Table 2). Thus, the value for management objective 3 was above the goal of

Table 2. Reproductive activity of northern spotted owls for 2008.

Parameter Description	Core Sites	Quadrat Sites
A) No. of sites monitored for reproduction*	86	33
B) No. of monitored sites that nested	59	19
C) No. of young fledged at monitored sites	84	31
D) Nesting rate (=B/A)	69%	58%
Reproductive rate (=C/A) HCP(6.2.1.3) Target = 0.61(avg over 5yrs)	0.98	1.24

*For quadrat sites includes occupied sites only

the HCP (0.61) in 2008. The running average for the reproductive rate for the tenth year of the HCP was 0.62 (Table 3.0), slightly above management objective 3.

Table 3.0 Northern Spotted Owl Yearly Summary 2008

Owl Status	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Single Unk Sex	8	8	1	1	3	3	2	7	3
Single Male	31	14	4	11	6	9	7	11	9
Single Female	3	4	8	11	5	5	9	12	10
Pair Status Unknown	43	39	39	42	38	38	45	47	21
Non-nesting Pairs	14	12	18	20	13	7	7	14	6
Nesting Pair (failed)	5	8	2	9	5	5	3	2	9
Nesting Pair	56	71	43	14	38	41	35	15	50
Total Monitored Activity Sites	160	156	115	108	108	108	108	108	108
Total Number of Owls	380	405	277	212	262	258	246	210	278
Total Number of Pairs	118	130	102	85	94	91	90	78	86
Total Number of Juveniles	102	119	60	19	60	59	48	24	84
Pair Occupancy Rate	73.8%	83.3%	88.7%	78.7%	87.0%	84.3%	83.3%	72.2%	79.6%
Reproductive Rate	0.86	0.92	0.59	0.22	0.64	0.65	0.53	0.31	0.98
Rolling Average Occupancy Rate (5YR)	73.8%	78.5%	81.9%	81.1%	82.3%	84.4%	84.4%	81.1%	81.3%
Rolling Average Reproductive Rate (5YR)	0.86	0.89	0.79	0.65	0.65	0.60	0.53	0.47	0.62

Notes:

[1] 1999 Pair Occupancy and Reproductive Rate were calculated from a random sample of the overall population of pairs,
and thus calculate to a Reproductive Rate of 0.61.

[2] 2000 and 2001 Pair Occupancy and Reproductive Rate were calculated from all pairs across HCP covered lands.

[3] 2002-present Pair Occupancy and Reproductive Rate are calculated from Core Sites (Level I and Level II owls).

For the quadrat sites, the 2008 reproductive rate was 1.24 (Table 3.1), which is significantly above the goal for management objective 3. However, the five-year running average for reproductive rate among quadrat sites is 0.59, slightly below the management objective (Table 3.1). Recall that the NSOSRP recommended monitoring of both the

core sites and quadrat sites for occupancy and reproduction and the results compared to other study sites within the region. Because the core sites and quadrat sites are managed in ways that are specific to the HCP, a comparison of trends in occupancy and reproduction with other study sites that are managed under different strategies (e.g., intensive timber harvest, moderate harvest, little to no harvest) can provide insight as to how the HCP is working and possibly what other factors may be affecting the spotted owl population (e.g., barred owls, the climate, etc.). The available information (e.g., Tables 1 – 3.1, Figures X-XX) indicate that trends for both the core and quadrat sites are tracking the results of other study areas.

Table 3.1 Northern Spotted Owl Yearly Quadrat Summary

Owl Status	2002	2003	2004	2005	2006	2007	2008
Single Unk Sex	1	2	3	2	2	0	0
Single Male	3	4	4	3	5	4	3
Single Female	3	1	3	1	3	0	0
Pair Status Unknown	6	13	13	7	15	11	3
Non-nesting Pairs	1	6	3	1	2	3	0
Nesting Pair (failed)	1	2	0	0	0	0	0
Nesting Pair	10	7	12	9	4	2	17
Total Number of Activity Sites Monitored	22	37	38	20	28	22	33
Total Number of Owls	55	74	87	49	51	40	89
Total Number of Pairs	17	28	30	17	20	15	25
Total Number of Juveniles	16	9	19	12	3	3	31
Pair Occupancy Rate	77.3%	75.7%	78.9%	85.0%	71.4%	68.2%	75.8%
Reproductive Rate	0.94	0.32	0.63	0.71	0.15	0.20	1.24
Rolling Average Occupancy Rate (5YR)	78.6%	77.8%	78.1%	78.9%	77.7%	75.8%	75.9%
Rolling Average Reproductive Rate (5YR)	0.89	0.75	0.72	0.71	0.55	0.40	0.59

Activity Site Levels of Protection

HCP Section 6.2.2 # 4, Conservation Measures, requires that owl activity sites on the covered lands be assigned to one of three protection levels. Accordingly, in July of 2008, 80 activity sites were designated as Level 1 sites. Level 1 sites are those spotted owl activity sites that under the HCP are afforded protection similar to that afforded spotted owls under "no take" management guidelines. Selection of Level 1 sites was guided by the parameters described in HCP 6.2.2.4: 1) having the requisite habitat levels within a 0.7 and 1.3 mile radius of the activity center; and 2) having supported spotted owls in the previous year (2007), and also in the year selected (2008)

In addition, as part of the minor modifications approved in 2002, further language regarding Level 1 sites was added to management objective 2:

Maintain spotted owl pairs on an average of 80 percent (over a five-year period) of the minimum of 108 activity sites on the ownership (as shown in Table 7, for 2002 this minimum number shall be 115 activity sites, then 108 for 2003 and all subsequent years). ***At least 80 of these sites shall be Level One sites, and the balance shall be Level Two sites. PALCO intends to maintain these selected Level One and Level Two sites as the core sites for a period of from three to five years, or as long as possible, given other circumstances that may arise, and may preclude their maintenance as such. PALCO intends to select core sites that are historically stable, reproductively successful, and that have minimal disturbance, given that they occur in a managed landscape.*** (Emphasis added).

In keeping with the requirements of HCP 6.2.2 # 4 and # 5, if less than 500 acres of suitable habitat exists within 0.7 miles, or less than 1,336 acres of suitable habitat exists within 1.3 miles, the acreage of habitat cannot be reduced. See the appendices for information on habitat acreage relative to Level 1 sites, THP activity, and quadrats.

Level 2 protection measures were afforded to 28 sites in 2008 (HCP 6.2.2.5). Level 2 sites receive 1,000-foot buffers during the breeding season. After the breeding season, or if a non-nesting status is determined, harvest may occur around a Level 2 activity site, as long as an 18-acre core area (the equivalent area of a 500-foot radius circle), with at least a 400-foot radius consisting of the best available habitat, is retained.

As with the Level 1 sites, as part of the minor modifications approved in 2002, further language regarding Level 2 sites was added to HCP 6.2.2 # 5, bullet # 4:

- *By 1 September of each year, PALCO shall designate the necessary number of Level Two sites, to make up the minimum number of activity sites as shown in Table 7.*

Accordingly, in late August HRC designated 28 Level 2 sites, which combined with the 80 Level One sites already designated to make up the 108 core sites for 2008.

Level 3 protection was afforded the balance of the activity sites on the HCP covered lands in 2008 (HCP 6.2.2 # 6). Level 3 sites are those sites not needed to meet management objectives 1 or 4 (108 minimum activity sites). As with Level 2 sites, Level 3 sites receive 1,000-foot buffers during the breeding season.

Language was also added (in 2002) to HCP 6.2.2 # 6 regarding Level 3 sites:

> – *During the breeding season, for activity sites which have been determined to be occupied by a non-nesting pair or single NSO, 18 acres around the activity site shall be maintained as suitable nesting habitat, if present. The protected 18 acres may conform to natural landscape features, as designated by PALCO's wildlife biologist or a designee, and the buffer protecting the activity site must have at least a 400 foot radius. At PALCO's discretion harvesting may occur during the breeding season, in the area adjoining the 18-acre habitat retention area.*

Thus, if a non-nesting status is determined, harvest may occur around a Level 3 activity site, so long as an 18-acre core area (the equivalent area of a 500-foot radius circle), with at least a 400-foot radius is retained. After the breeding season, harvest of the Level 3 sites may occur. If the activity site is harvested, any known nest trees are to be retained.

Habitat Conditions

The amount and type of spotted owl habitat as per 6.2 Table 6 of the HCP is reported annually. Habitat information from the HRC Geographic Information System (GIS) is a "snapshot in time" of the habitat condition, and for consistency the snapshot is taken on or around 1 June each year. Thus, the information contained in this section represents habitat conditions from approximately 1 June 2007 to 1 June 2008.

Ownership changes in and quantity of the HCP lands have occurred over the last 10 years. For example, certain lands have been sold to federal or state entities or have been "swapped" out of the HCP (following HCP agency review) for real estate sales and have been replaced with parcels similar in size and habitat value from our non-HCP ownership, thus further changes in overall acreage and patch size has occurred during the past several years.

As would be expected given that the landscape outside of those areas committed to conservation is managed for forest management and forest growth, the acreage of nesting habitat has been gradually decreasing on the landscape over time. In particular, the previous forestland owners practiced primarily even-aged silviculture. The average annual decrease of nesting habitat has been just over 1%, on average over the life of the

HCP. Acres of roosting habitat have remained relatively constant, with a slight overall increase. Similar to roosting habitat, foraging habitat has remained relatively constant. While harvest conducted under typical silvicultural methods employed by HRC can reduce nesting and in some cases roosting habitat, partial harvest can retain suitable habitat, particularly roosting and/or foraging habitat in the process.

Regarding regional habitat condition Courtney et al. (2004) summarized habitat trends for the spotted owl range-wide on both Federal and non-Federal lands:

"FEDERAL LANDS

The Northern Spotted Owl habitat trend analysis conducted by the USFWS (USDI 2004) indicated an overall decline of approximately 2.11% in the amount of suitable habitat due to range-wide management activities from 1994 to 2003. The majority of management-related habitat loss was in Oregon. Habitat loss due to natural causes totaled 224,041 acres, which equated to a 3.03% decline in all available habitats range-wide over this period. Overall, habitat loss range-wide due to all factors has resulted in a total decline of 5.14% between 1994 and 2003 (0.57% per year). Annual rates of habitat loss due to management activities were less than 25% of rates projected at the time of listing. Between 1994 and 2003, it was estimated that there would be an 8% increase in available habitat range-wide, resulting from succession of younger forests into suitable habitat.

NON-FEDERAL LANDS

As noted above, data are insufficient to determine the rate of change on non-Federal lands since 1990. However, there have been two major changes on non-Federal lands concerning suitable habitat protection since the owl was listed; increased state regulation and the emergence of Habitat Conservation Plans (HCPs). In general, HCPs represent a significant positive development in terms of reduced habitat risk over State Forest Practice Rules alone. In concert with the Northwest Forest Plan (NWFP), HCPs offer the opportunity to develop landscape scale approaches to Northern Spotted Owl habitat conservation rather than focusing on individual owl sites. However, poor documentation of initial baselines for most HCPs precludes estimates of habitat trends. We believe the development of HCPs is a positive step in owl conservation because they offer opportunities to increase cooperation between private landowners and government agencies and to seek creative ways to manage habitat in working forests."

Courtney et al. (2008) did not find sufficient reason to deviate from their findings of 2004 (Courtney et al. 2004) regarding the assessment of threats to the northern spotted owl, including habitat loss from timber harvest and fire. Regarding this HCP, good baseline data exists for habitat, which will enable us to continue tracking habitat trends over time.

Similar to previous annual reports, an analysis of patch sizes of suitable nesting habitat has been conducted on both the 18-acre and 80-acre polygon size, and included with this report (Table 4.0). The acres of habitat in the Grizzly Creek Complex and Owl Creek MMCA are shown separately (grizz_owl) due to the unique nature of these parcels.

Table 4.0 Acres of Habitat and Nesting Habitat Patches

	Acres				Nesting	Nesting
Year	Nesting	Roosting	Foraging	Non Habitat	18+ Acre Patches	80+ Acre Patches
1999	87,416	35,343	40,780	45,142	199	64
2000	82,205	36,670	40,753	49,053	204	68
2001	76,799	37,416	40,608	53,858	214	62
2002	70,309	38,209	39,642	60,521	226	72
2003	65,984	38,289	39,538	64,870	231	79
2004	63,153	38,641	40,103	66,784	238	83
2005	60,927	39,557	40,307	70,442	241	93
2006	58,453	39,043	39,533	74,204	244	92
2007	56,386	37,390	39,010	78,431	250	87
2008	55,412	37,747	39,890	77,886	251	88
grizz_owl	1,700	207	322	343	4	4

For both the 18-acre and 80-acre patches there has been a slight increase over time, although the total of 80-acre patches has declined somewhat since 2006. In general, habitat conditions have changed relatively little in the reporting period of the HCP, except for the location and distribution of the polygons. The continued harvest of mature (i.e., nesting) stands, when combined with reforestation and growth on the interspersed young seral stands, will be interesting to track over time relative to the management goals of the HCP for spotted owls.

Banding Program

As discussed in previous annual reports, banding has been proposed as a long-term research and management tool to help monitor the spotted owl population on the ownership, including the HCP covered lands. The primary purposes of the banding and re-sighting project include: defining stable sites (site fidelity and displacement); detection of changes in occupancy over time (turnover and replacement); documentation of movements of sites and nest areas; and assessment of habitat quality based on site occupancy and reproductive history. We again request that the USFWS consider this report, with associated map (Figure 1), to satisfy their request for information concerning HRC's banding program as discussed in their letter of 14 January 2004.

During the 2008 field season our banding efforts were significantly hampered by manpower and other issues surrounding the Chapter 11 bankruptcy filing by the previous landowner. In addition, some necessary permit renewals were not received until the season was well underway. We did continue in an effort to band adult spotted owls as advised by the NSOSRP. As a result, we banded 17 adult spotted owls during the 2008 field season.

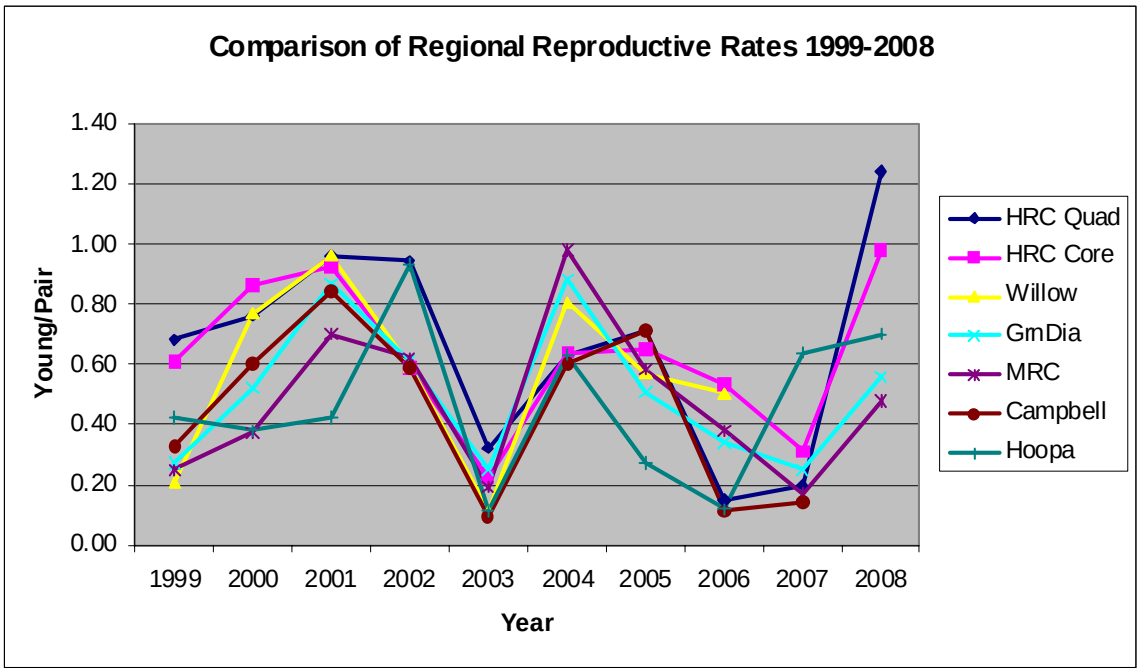
Regional Trends

PALCO, the NSOSRP, and the Agencies have convened and discussed the HCP management objectives, potential reasons why they may not be met, and potential

corrective measures to implement following both the 2003 and 2007 seasons. On both occasions the NSOSRP recommended that the PALCO, and now HRC, results be compared to those of other study areas in the region. Figure 4 below illustrates the regional northern spotted owl reproductive rates for several study areas of Northern California. Due to time and workload constraints not all study areas reported for 2007 were able to respond with 2008 data. The data is from the responding study areas (Douglas, Hamm and Higley, pers. comm. 2009).

As demonstrated in the figure, results for both the core and quadrat sites on HRC track the results of other study areas over the HCP period. As with other studies in the region (Anthony, et al 2004, Franklin 1997, Franklin 2000) data indicates that reproductive results are strongly correlated to regional trends in climate (Franklin, et al. 2000, HRC, unpublished data). Thus, there are good and bad reproductive years that appear to track precipitation early in the breeding season.

Figure 4.



FUTURE ACTION PLAN

Surveys

Current plans call for continued surveys in 2009 with the quadrat sampling technique. In 2009, quadrats 3, 13, 18, 20 are scheduled for monitoring. These quadrats were initially surveyed in 2003 and it will be interesting to compare them with the 2008 surveys, distribution of activity centers, reproduction, and even location and activity level of barred owls. Timely follow-up visits (i.e., within 72 hours, weather permitting) will be conducted to all nighttime contacts. Following the season, the data gathered will be used

to evaluate the efficacy of the HCP management objectives and conservation measures for the core sites, and also for the quadrat sites.

Banding

In 2009 we intend to work with the Service and CDFG to make our banding efforts as efficient and effective as possible, keeping in mind the goals of the effort. The overall intent is to utilize the program as a complete mark and resight effort and to develop results similar to other study sites in the region. As always, during any of our capture and banding efforts, we will continue to be cautious in our efforts, keeping the care and safety of the birds first in mind.

Habitat Retention Area Strategy

HRC and the Wildlife Agencies have cooperatively developed a habitat-based approach for Level 1 sites referred to as the Habitat Retention Area (HRA) strategy. HRAs will be established surrounding Level 1 sites and will retain quality nesting and roosting habitat near current nests and activity centers. It is our mutual hope to have the HRA program finalized and implemented for 2009.

REFERENCES

Anthony, R.G., Eric D. Forsman, Alan B. Franklin, David R Anderson, Kenneth P. Burnham, Gary C. White, Carl J. Schwarz, Jim Nichols, Jim E. Hines, Gail S. Olson, Steven H. Ackers, Steve Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Katie M. Dugger, Katherine E. Fehring, Tracy L. Fleming, Richard P. Gerhardt, Scott A. Gremel, R.J. Gutierrez, Patti J. Happe, Dale R. Herter, J. Mark Higley, Rob. B Horn, Larry L. Irwin, Peter J. Loschl, Janice A. Reid, and Stan G. Sovern. 2004. Status and Trends in Demography of Northern Spotted Owls, 1985-2003. Report for the Interagency Regional Monitoring Program. 179 pp.

Courtney, Steven P., Jennifer A. Blakesley, Richard E. Bigley, Martin L. Cody, Jack P. Dumbacher, Robert C. Fleischer, Alan B. Franklin, Jerry F. Franklin, Rocky J. Gutierrez, John M. Marzluff, and Lisa Sztukowski. 2004. Scientific Evaluation of the Status of the Northern Spotted Owl. Report to the U.S. Fish and Wildlife Service in Support of the 5-Year Status Review Process.

Courtney, S.P., A.B. Carey, M.L. Cody, K. Engel, K.E. Fehring, J.F. Franklin, M.R. Fuller, R.J. Gutierrez, J.F. Lehmkuhl, M.A. Hemstrom, P.F. Hessburg, S.L. Stephens, L.A. Sztukowski, L. Young. 2008. Scientific Review of the Draft Northern Spotted Owl Recovery Plan and Reviewer Comments. Sustainable Ecosystems Institute. Portland, OR. 159 pp.

Diller, L. 2007. Personal Communication between Lowell Diller, Senior Biologist at Green Diamond Resource Company and Daniel Dill, Senior Wildlife Biologist at PALCO.

Douglas, R. 2009. Personal communication between Robert Douglas, Forest Sciences Manager at Mendocino Redwood Company (MRC) and Brad Mauney, Lead Wildlife Biologist at HRC.

Franklin, A. 1997. Factors Affecting Temporal and Spatial Variation in Northern Spotted Owl Populations in Northwest California. PhD. Dissertation, Colorado State University, Fort Collins, Colorado. 185 pp.

Franklin, A.B., D.R. Anderson, R.J. Gutierrez, and K.P. Burnham.2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California. Ecological Monographs 70:539-590.

Hamm, K. 2009. Personal communication between Keith Hamm, Senior Wildlife Biologist for Green Diamond Resource Company (GDRCo), and Brad Mauney, Lead Wildlife Biologist at HRC.

Higley, J.M. 2009. Personal communication between J. Mark Higley, Senior Biologist for Hoopa Tribal Forestry, and Brad Mauney, Lead Wildlife Biologist at HRC.

The Pacific Lumber Company. 1999. Habitat Conservation Plan for the Properties of The Pacific Lumber Company, Scotia Pacific Holding Co., and Salmon Creek Corporation.

Thompson, J. 2006. Personal Communication between Joel Thompson, Wildlife Biologist at Green Diamond Resource Company and Brad Mauney, Wildlife Biologist at PALCO.

U.S. Department of the Interior, Fish and Wildlife Service. 2004. Estimate Trends in Suitable Habitat for the Northern Spotted Owl (*Strix occidentalis caurina*) on Federal Lands from 1994 to 2003. For Use By: Sustainable Ecosystems Institute for the Northern Spotted Owl 5-Year Review. U.S.D.I. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 1992. Protocol for surveying proposed management activities that may impact northern spotted owls. March 7, 1991 (Revised March 17, 1992).

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1999. Biological and Conference Opinions Regarding Issuance of an Incidental Take Permit to the Pacific Lumber Company, Scotia Pacific Company LLC, and Salmon Creek Corporation. 469 pp. and Appendices.